

Appl. No. 10/665,028

Amdt. Dated May 1, 2006

Reply to Final Office Action of January 31, 2006

REMARKS

This is a full and timely response to the Final Office Action mailed January 31, 2006. Reexamination and reconsideration in view of the foregoing amendments and following remarks is respectfully solicited.

Claims 1-9 are pending in this application, with Claims 1, 5, 6, and 7, being the independent claims. Claims 1, 5, 6, and 7 have been amended. No new matter is believed to have been added.

Rejections Under 35 U.S.C. § 103

The Examiner rejected Claims 1 and 5-9 under 35 U.S.C. § 103(a) as being unpatentable over DE10035622A1 in view of Sullivan or in view of JP07112294A.

Claims 1, 5, 6, and 7 have been amended to include a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle. Specifically, claim 1 includes the limitation "a housing detachably coupled to the outer nozzle and circumscribing the second end of the outer nozzle in spaced apart relationship to define a circumscribing shield gas flow channel about the outer nozzle, the shield gas flow channel having an opening adjacent to the second end of the outer nozzle." Claim 5 includes the limitation "a detachable housing circumscribing the second end of the outer nozzle in spaced apart relationship to define a circumscribing shield gas flow channel about the outer nozzle, the shield gas flow channel having an opening adjacent to the second end of the outer nozzle." Claim 6 includes the limitations "a housing defining a third central open channel through which fluid may pass, the housing detachably attached to the main body and circumscribing the second end of the outer nozzle" and "a shield gas flow channel defined between the outer nozzle and the housing and having an opening adjacent to the second end of the outer nozzle." Claim 7 include the limitation "a housing detachably attached to the nozzle and circumscribing the second end of the outer nozzle in spaced apart relationship to define the shield gas flow passage, the shield gas flow passage having an opening adjacent to the second end of the outer nozzle and proximate the tip."

Appl. No. 10/665,028

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DE10035622A1 does not teach or suggest a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle. DE10035622A1 discloses a welding and powder coating head with a central channel 11 and a conical powder channel 15, which the central channel 11 coaxially surrounds. The welding head also includes powder supply means 34 and 35 for bringing powder into an inlet range 13 of the powder channel 15. (Abstract)

DE10035622A1 makes no mention of a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle.

Sullivan does not teach or suggest a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle. Sullivan teaches an apparatus for subjecting a workpiece to the action of a laser beam. (Abstract) As shown in figures 3 and 5, the nozzles used in Sullivan do not include a housing circumscribing a tip of a nozzle. Sullivan makes no mention of a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle.

JP07112294A does not teach or suggest a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle. JP07112294A teaches a nozzle unit fitted with nozzles in freely attachable-detachable to-from a housing in which a reflection mirror is housed. A nozzle unit 3 for welding and a nozzle unit for cutting are provided on a female screw part 22 of a housing 2 in a freely attachable-detachable configuration. JP07112294A thus teaches detachable housing elements in a laser nozzle environment. However, JP07112294A makes no mention of a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle.

Therefore, Claims 1, 5, 6, and 7 are patentable over DE10035622A1 in view of Sullivan or in view of JP07112294A because claims 1, 5, 6, and 7 include limitations that are not taught or suggested by DE10035622A1, Sullivan, or JP07112294A.

Claims 8 and 9 are dependent on Claim 7 and should be allowable for at least the same reasons as Claim 7 stated above.

Appl. No. 10/665,028

Amdt. Dated May 1, 2006

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Applicant, accordingly, respectfully requests withdrawal of the rejections of Claims 1 and 5-9 under 35 U.S.C. § 103(a) as being unpatentable over DE10035622A1 in view of Sullivan or in view of JP07112294A.

The Examiner rejected Claims 2 and 3 under 35 U.S.C. § 103(a) as being unpatentable over DE10035622A1 in view of Sullivan or in view of JP07112294A, and further in view of Buongiorno.

Claims 2 and 3 are dependent on Claim 1 and should be allowable for at least the same reasons as Claim 1 stated above.

Applicant, accordingly, respectfully requests withdrawal of the rejections of Claims 2 and 3 under 35 U.S.C. § 103(a) as being unpatentable over DE10035622A1 in view of Sullivan or in view of JP07112294A, and further in view of Buongiorno.

The Examiner rejected claims 4-9 under 35 U.S.C. § 103(a) as being unpatentable over DE10035622A1 in view of Sullivan or in view of JP07112294A and in view of Buongiorno, and further in view Patent Application Publication No. US2004/0099643A1 ("Fabbro").

Claim 4 is dependent on Claim 1 and should be allowable for at least these same reasons as Claim 1 stated above.

As previously discussed, Claims 5, 6, and 7 have been amended to include a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle.

Also as previously discussed, DE10035622A1, Sullivan and JP07112294A do not teach or suggest a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle.

Buongiorno does not teach or suggest a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle. Buongiorno teaches a laser powered laser cladding apparatus that projects a laser beam to impinge upon a metal workpiece to form a shallow puddle of liquid metal. (Abstract) As illustrated in figure 1, the laser powered metal cladding

Appl. No. 10/665,028

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apparatus 10 includes a rear or upper unit 11 consisting of three elements 12-14 and a front or bottom unit 15 that consists of three other elements 16-18. Element 16 is an inner conical cup that is disposed within an outer conical cup 17 and is fixedly connected thereto by a brazing operation that employs solder rings in annular grooves 31-33 of the inner cup 16. An inner surface portion of the front unit 15 and a confronting outer surface portion at the front portion of the rear unit 11 are spaced slightly from each other and cooperate to perform an annular conical passage 35 through which metal powder for cladding is delivered to outlet opening 23. (column 4, line 66 to column 5, line 3) The confronting inner and outer surfaces of the respective cups 17 and 16 cooperate to form an annular conical fluid jacket 40 which is accessible through two apertures 41 that extend transversely through outer cup 17. (column 5, lines 7-10) At the rear of fluid jacket 40 is a relatively large manifold 42 formed by an annular groove in the outer surface of inner cup 16 which is, for the most part, closed by outer cup 17. The large manifold 42 is provided with the gas entrances provided by two apertures 43 that extend through the side of the outer cup 17. (column 5, lines 11-15) Inert shielding gas for shielding the weld area and cooling the removable tip 18 is supplied to the large manifold 42 through all four aperture 3 and flows through the four tubes 45 to the small manifold 46. Buongiorno thus teaches a manifold system for a welding head located between two fixed portions of an outer nozzle. Specifically, Buongiorno does not teach or suggest a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle.

Fabbro teaches blowing gas onto a weld area by means of a ring nozzle to allow centripetal flow of the gas. (Abstract) As illustrated in figure 1, the nozzle 6 is made up of an inner tube 8 and an outer tube 9, which are concentric and therefore define a ring-shaped chamber 10 between them. (paragraph 0008) Fabbro makes no mention of a detachable housing circumscribing an end of the outer nozzle and the shield gas flow channel having an opening adjacent to the end of the outer nozzle.

Therefore, Claims 5, 6, and 7 are patentable over DE10035622A1 in view of Sullivan or in view of JP07112294A and in view of Buongiorno, and further in view of

Appl. No. 10/665,028

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Fabbro because claims 5, 6, and 7 include limitations that are not taught or suggested by DE10035622A1 in view of Sullivan, JP07112294A, Buongiorno, and Fabbro.

Claims 8 and 9 are dependent on Claim 7 and should be allowable for at least the same reasons as Claim 7 stated above.

Applicant, accordingly, respectfully requests withdrawal of the rejections of claims 4-9 as being unpatentable over DE10035622A, Sullivan, JP07112294A, Buongiorno, and Fabbro.

Appl. No. 10/665,028

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Conclusion

Based on the above, independent Claims 1, 5, 6, and 7 are patentable over the citations of record. The dependent claims are also submitted to be patentable for the reasons given above with respect to the independent claims and because each recite features which are patentable in its own right. Individual consideration of the dependent claims is respectfully solicited.

The other art of record is also not understood to disclose or suggest the inventive concept of the present invention as defined by the claims.

Hence, Applicant submits that the present application is in condition for allowance. Favorable reconsideration and withdrawal of the objections and rejections set forth in the above-noted Office action, and an early Notice of Allowance are requested.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

If for some reason Applicant has not paid a sufficient fee for this response, please consider this as authorization to charge Ingrassia, Fisher & Lorenz, Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

INGRASSIA FISHER & LORENZ

Dated: 5/1/06

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